Spot Safety Project Evaluation

Project Log # 200512196

Spot Safety Project # 02-98-232

Spot Safety Project Evaluation of the Asphalt Island Installation and Stop Sign Relocation at SR 1423 and SR 1401 in Craven County

Documents Prepared By:

Safety Evaluation Group
Traffic Safety Systems Management Section
Traffic Engineering and Safety Systems Branch
North Carolina Department of Transportation

Principal Investigator

_____ 9/7/06
Samuel D. Coleman, EI Date

Traffic Safety Project Engineer

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 02-98-232 – Asphalt Island Installation and Stop Sign Relocation at SR 1423 and SR 1401 in Craven County.

Project Information and Background from the Project File Folder

SR 1423 is a two-lane 55 mph roadway that intersects with SR 1401, which is a two-lane 45 mph facility. The intersection is controlled by a stop condition on SR 1423.

The original problem statement was that vehicles parked at the business located in the southeast quadrant blocked clear visibility of the stop sign. The improvement chosen for the subject location was to install an asphalt island in the southeast quadrant and relocate the stop sign around the radius. The final completion date for the improvements at the subject location was on July 9, 2001 at a cost of $6,000.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with all the crashes along the subject road, the crash data omitted from this analysis to consider for an adequate construction period was from June 2001 through August 2001. The before period consisted of reported crashes from October 1, 1996 through May 31, 2001 (4 years, 8 Months) and the after period consisted of reported crashes from September 1, 2001 through April 30, 2006 (4 Years, 8 Months). The ending date for this analysis was determined by the available crash data at the time the crash analysis was completed.

The treatment data consisted of all crashes at the intersection with a 150’ y-line. The following data table depicts the Naive Before and After Analysis for the above information. Please note that Frontal Impact crash types were the target crashes for the applied countermeasure. These crash types considered are as follows: Left Turn, same roadway; Left Turn, different roadway; Right Turn, same roadway; Right Turn, different roadway; Head On and Angle.

Treatment Information

	Before	After	Percent Reduction (-) Percent Increase (+)
Total Crashes	5	8	60.0
Total Severity Index	5.4	5.6	3.5
Frontal Impact Crashes	5	5	0.0
Frontal Severity Index	5.4	5.4	0.0
Volume	2970	3350	12.8

Treatment Injury Crashes

	Before	After	Percent Reduction (-) Percent Increase (+)
Fatal	0	0	0.0
Class A	0	0	0.0
Class B	3	2	-33.3
Class C	0	3	300.0
Property Damage Only	2	3	50.0

Table 1.

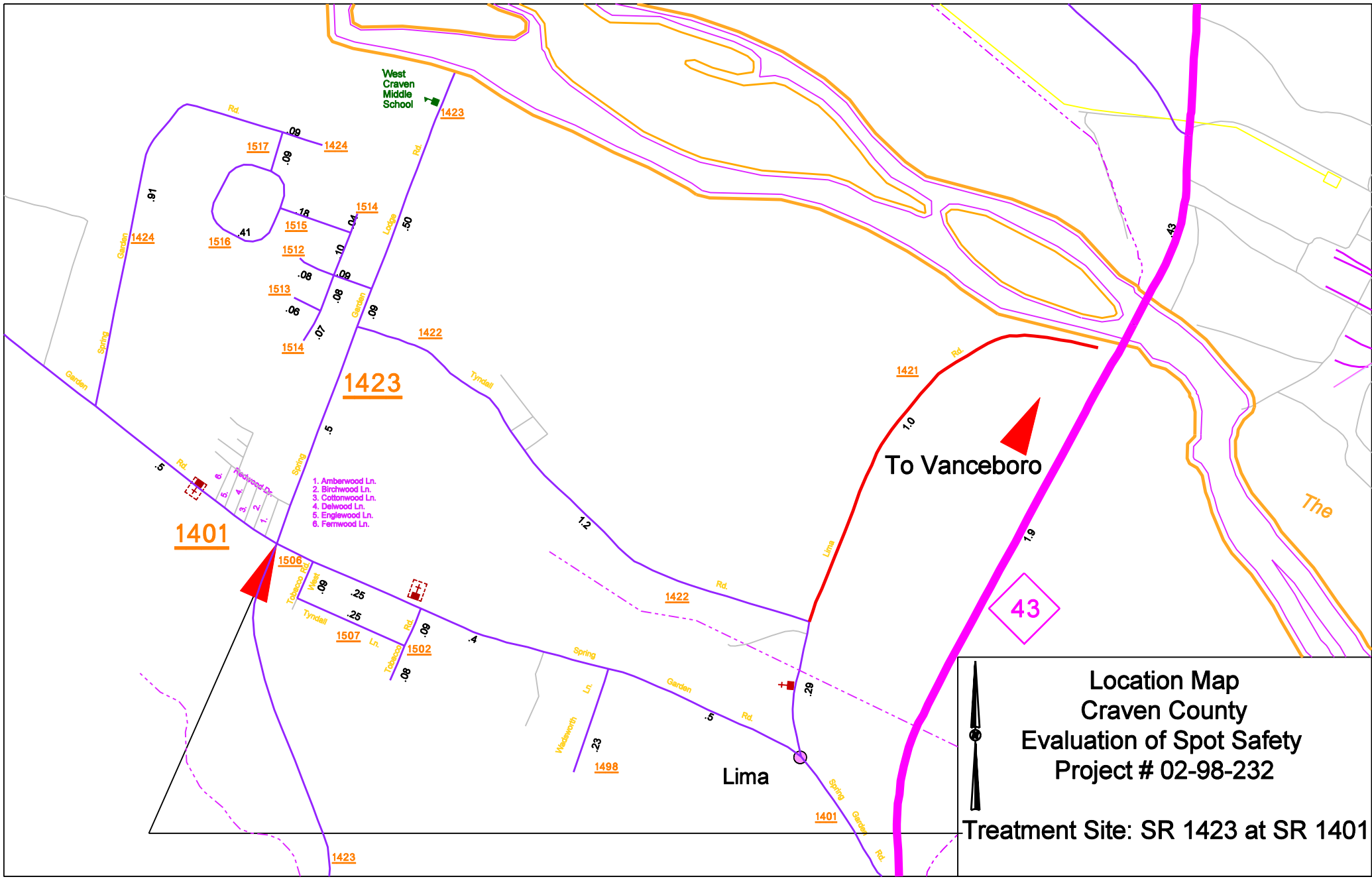
The naive before and after analysis at the treatment location resulted in a 60 percent increase in Total Crashes, a zero percent change in Frontal Impact Crashes and a 13 percent increase in Average Daily Traffic (ADT). The before period ADT year was 1999 and the after period ADT year was 2003.

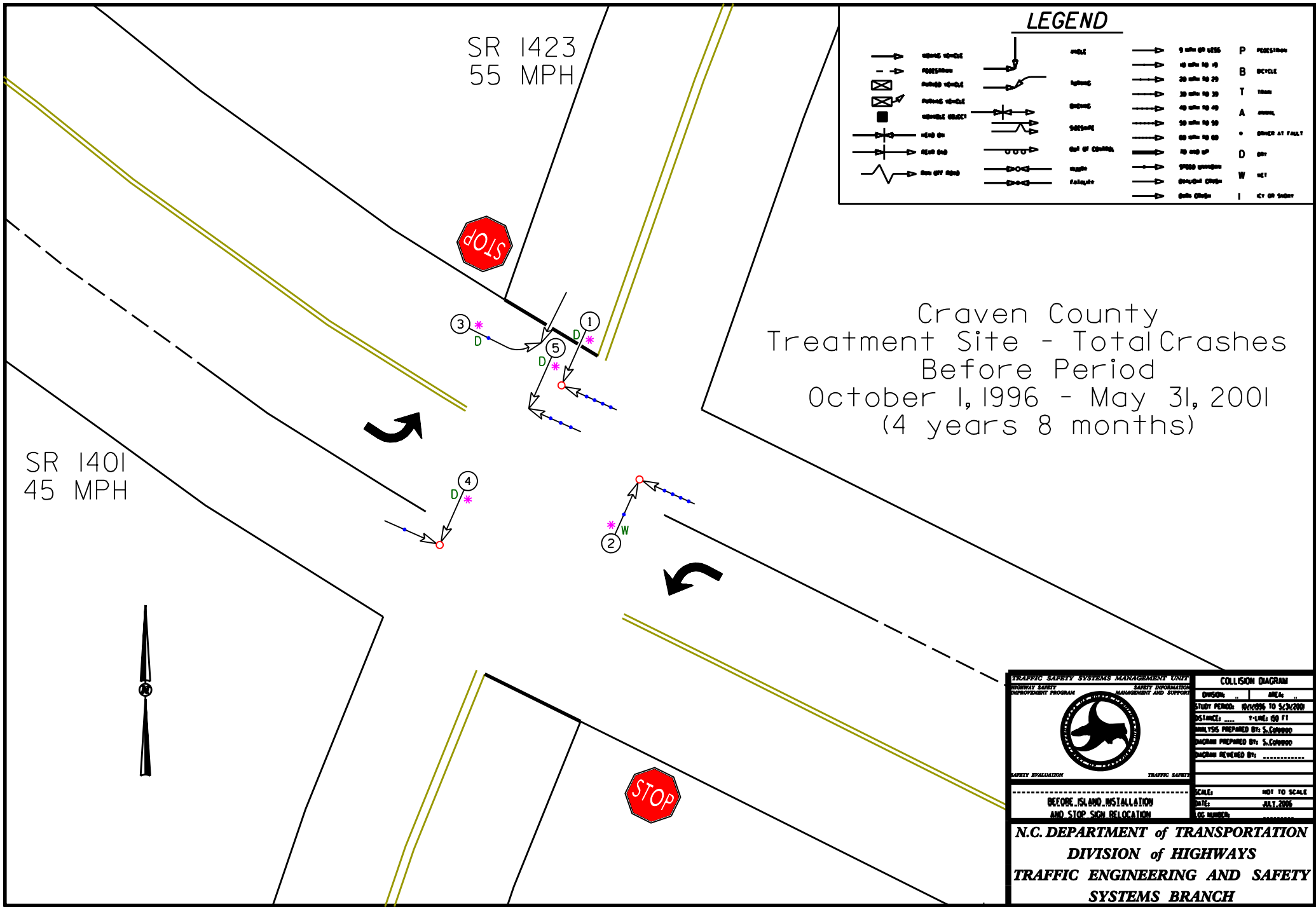
Results and Discussion

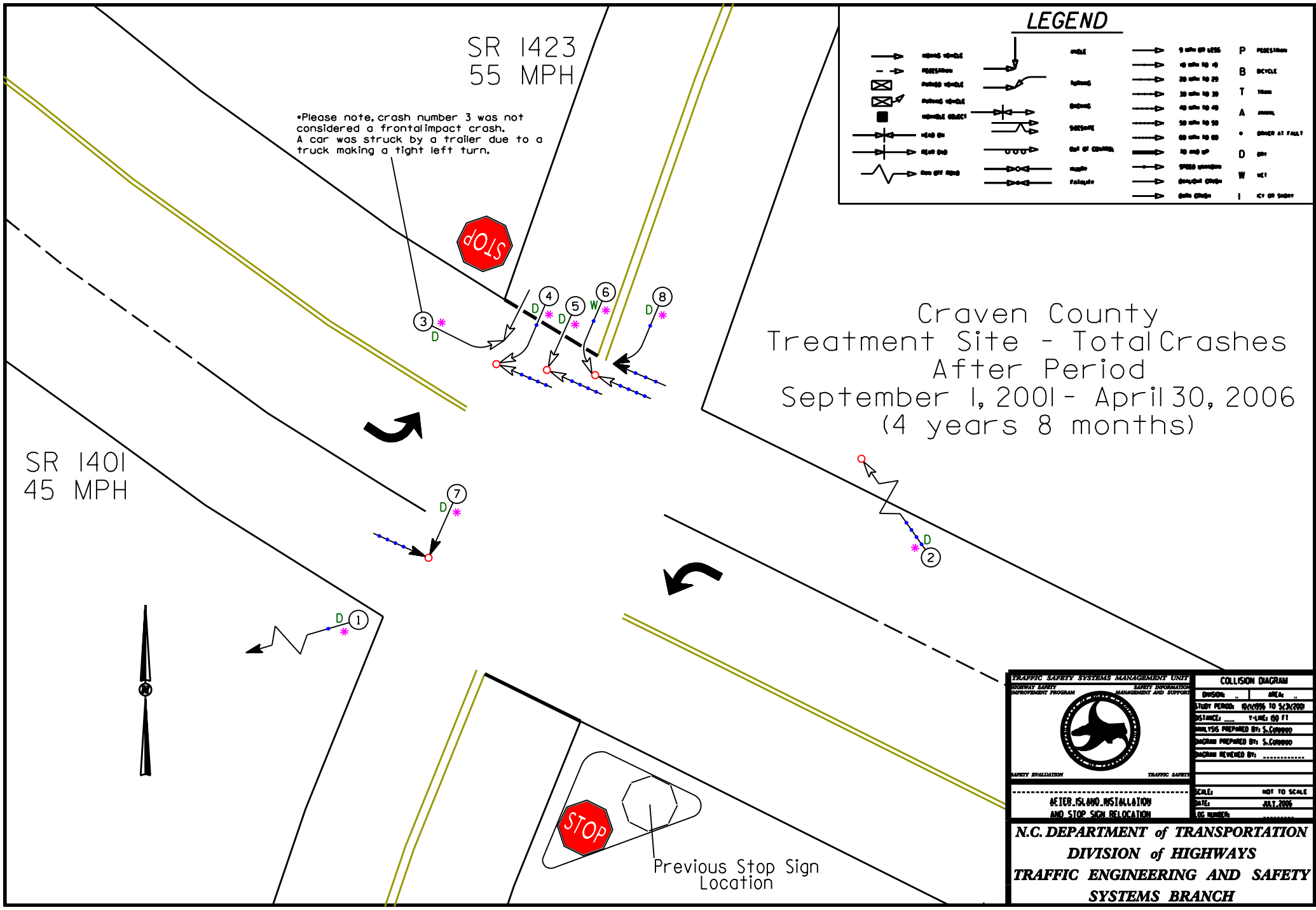
The naïve before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in a 60 percent increase in Total Crashes and a zero percent change in Frontal Impact Crashes. The summary results above demonstrate that the treatment location appears to have had an increase in the number of Total Crashes and no change in the number of Frontal Impact Crashes from the before to the after period.

The data does not show any significant changes from the before to the after period, but there are a couple of observations that were noted. Upon reviewing the crash analysis there was a change in night crashes from the before to the after period (0 to 3). Referencing the collision diagram, four of the five before period crashes involved a vehicle traveling southbound and six of the eight after period crashes involved a vehicle traveling southbound. Of these six after period crashes, four of them were of the southbound and westbound combination.

As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of road.


West Craven Middle School
1423
1424
1517
1514
1515
1516
1512
1513
1422
1421
1401
1506
1507
1502
1498
Lima
To Vanceboro
43
1. Amberwood Ln.
2. Birchwood Ln.
3. Cottonwood Ln.
4. Delwood Ln.
5. Englewood Ln.
6. Fernwood Ln.
Location Map
Craven County
Evaluation of Spot Safety
Project # 02-98-232
Treatment Site: SR 1423 at SR 1401


SR 1423
55 MPH
SR 1401
45 MPH
STOP
STOP
LEGEND
Craven County
Treatment Site - Total Crashes
Before Period
October 1, 1996 - May 31, 2001
(4 years 8 months)
TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT
HIGHWAY SAFETY IMPROVEMENT PROGRAM
SAFETY INFORMATION MANAGEMENT AND SUPPORT
SAFETY EVALUATION
TRAFFIC SAFETY
BEFORE ISLAND INSTALLATION AND STOP SIGN RELOCATION
COLLISION DIAGRAM
DIVISION:
AREA:
STUDY PERIOD: 10/1/1996 TO 5/31/2001
DISTANCE: Y-LINE: 150 FT
ANALYSIS PREPARED BY: S.Cothran
DIAGRAM PREPARED BY: S.Cothran
DIAGRAM REVIEWED BY:
SCALE: NOT TO SCALE
DATE: JULY, 2006
TIC NUMBER:
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH


SR 1423
55 MPH
•Please note, crash number 3 was not considered a frontal impact crash. A car was struck by a trailer due to a truck making a tight left turn.
STOP
SR 1401
45 MPH
STOP
Previous Stop Sign Location
LEGEND
Craven County
Treatment Site - Total Crashes
After Period
September 1, 2001 - April 30, 2006
(4 years 8 months)
TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT
HIGHWAY SAFETY IMPROVEMENT PROGRAM
SAFETY INFORMATION MANAGEMENT AND SUPPORT
SAFETY EVALUATION
TRAFFIC SAFETY
COLLISION DIAGRAM
DIVISION:
AREA:
STUDY PERIOD: 10/1/1996 TO 9/30/2001
DISTANCE: ..... Y-LINE: 150 FT
ANALYSIS PREPARED BY: S.Cothran
DIAGRAM PREPARED BY: S.Cothran
DIAGRAM REVIEWED BY:
SCALE: NOT TO SCALE
DATE: JULY, 2006
TIC NUMBER:
ADDED ISLAND INSTALLATION AND STOP SIGN RELOCATION
N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY SYSTEMS BRANCH